





Electrodeposited copper foil and process for making same

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This invention is directed to a controlled low profile electrodeposited copper foil. In one embodiment this foil has a substantially uniform randomly oriented grain structure that is essentially columnar grain free and twin boundary free and has an average grain size of up to about 10 microns. In one embodiment this foil has an ultimate tensile strength measured at 23 DEG C in the range of about 87,000 to about 120,000 psi and an elongation measured at 180 DEG C of about 15% to about 28%. The invention is also directed to a process for making the foregoing foil, the process comprising: (A) flowing an electrolyte solution between an anode and a cathode and applying an effective amount of voltage across said anode and said cathode to deposit copper on said cathode; said electrolyte solution comprising copper ions, sulfate ions and at least one organic additive or derivative thereof, the chloride ion concentration of said solution being up to about 1 ppm; the current density being in the range of about 0.1 to about 5 A/cm²; and (B) removing copper foil from said cathode.

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(54) **Electrodeposited copper foil and process for making same.**

(57) This invention is directed to a controlled low profile electrodeposited copper foil. In one embodiment this foil has a substantially uniform randomly oriented grain structure that is essentially columnar grain free and twin boundary free and has an average grain size-of up to about 10 microns. In one embodiment this foil has an ultimate tensile strength measured at 23°C in the range of about 87,000 to about 120,000 psi and an elongation measured at 180°C of about 15% to about 28%. The invention is also directed to a process for making the foregoing foil, the process comprising: (A) flowing an electrolyte solution between an anode and a cathode and applying an effective amount of voltage across said anode and said cathode to deposit copper on said cathode; said electrolyte solution comprising copper ions, sulfate ions and at least one organic additive or derivative thereof, the chloride ion concentration of said solution being up to about 1 ppm; the current density being in the range of about 0.1 to about 5 A/cm²; and (B) removing copper foil from said cathode.

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